

Title (en)  
YIG THIN FILM MICROWAVE APPARATUS

Publication  
**EP 0208548 A3 19880727 (EN)**

Application  
**EP 86305294 A 19860709**

Priority  
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Abstract (en)  
[origin: EP0208548A2] Microwave apparatus includes a YIG thin film device (1) utilising the ferrimagnetic resonance effect, and a magnetic circuit (2) having a gap of length  $l_g$  in which the YIG thin film device is provided and applying a bias magnetic field perpendicular to a film surface of the YIG thin film device, the magnetic circuit (2) including a permanent magnet (4) having a thickness  $l_m$  and a soft magnetic plate (5) having a thickness  $l_x$ . <??>The permanent magnet (4) satisfies the characteristics <MATH> and the soft magnetic plate satisfies the characteristics <MATH> wherein:  $f_0$  is the resonance frequency of the YIG thin film device (1);  $\gamma$  is the gyromagnetic ratio of the YIG thin film;  $NZ_{<Y>}$  is the demagnetisation factor of the YIG thin film;  $4\pi M_{so<Y>}$  is the saturation magnetisation of the YIG thin film at room temperature;  $4\pi M_{so<Y>}$  is the saturation magnetisation of the soft magnetic plate (5);  $B_r\text{ DEG}$  is the remanence of the permanent magnet (4) at room temperature;  $\alpha_1<B>$  is the first order temperature coefficient of the remanence of the permanent magnet (4) at or near room temperature;  $\alpha_1<Y>$  is the first order temperature coefficient of the saturation magnetisation of the YIG thin film at or near room temperature; and  $\alpha_1<x>$  is the first order temperature coefficient of the saturation magnetisation of the soft magnetic plate (5) at or near room temperature. <??>The thicknesses  $l_m$  and  $l_x$  are selected to improve the temperature dependency of the resonance frequency of the apparatus, such that it is capable of operating stably over wide ranges of working frequencies and temperatures.

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CPC (source: EP KR US)  
**H01F 10/245** (2013.01 - EP US); **H01P 1/218** (2013.01 - EP US); **H03B 9/00** (2013.01 - KR)

Citation (search report)  
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• [A] 1985 IEEE-MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM DIGEST, Saint-Louis, Missouri, 4th-6th June 1985, pages 285-288, IEEE, New York, US; Y. MURAKAMI et al.: "A bandpass filter using YIG film grown by LPE"

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